

SOME time ago an article appeared in this magazine which was entitled, "A Favorite Circuit Simplified," which was written by myself. I have always thought that there was a genuine demand on the part of radio fans, for real good circuits—not a rehashed version of old circuits with extra parts and a new name, but the real tried and tested circuits, which have been in use for so long that they have come to be known as "standard" circuits.

Circuits may come and circuits may go, but these seem to remain with us year in and year out. There is only one reason for this—the circuits are good. Of that there can be no question.

These circuits had several drawbacks. They have had as a rule too many controls, too many parts, or were rather complicated to build. I have tried the originals of all these circuits and have liked the way they worked, but I did not like the five or six controls which were incorporated in the tuning systems. I believe that our modern

Another Favorite Circuit Simplified

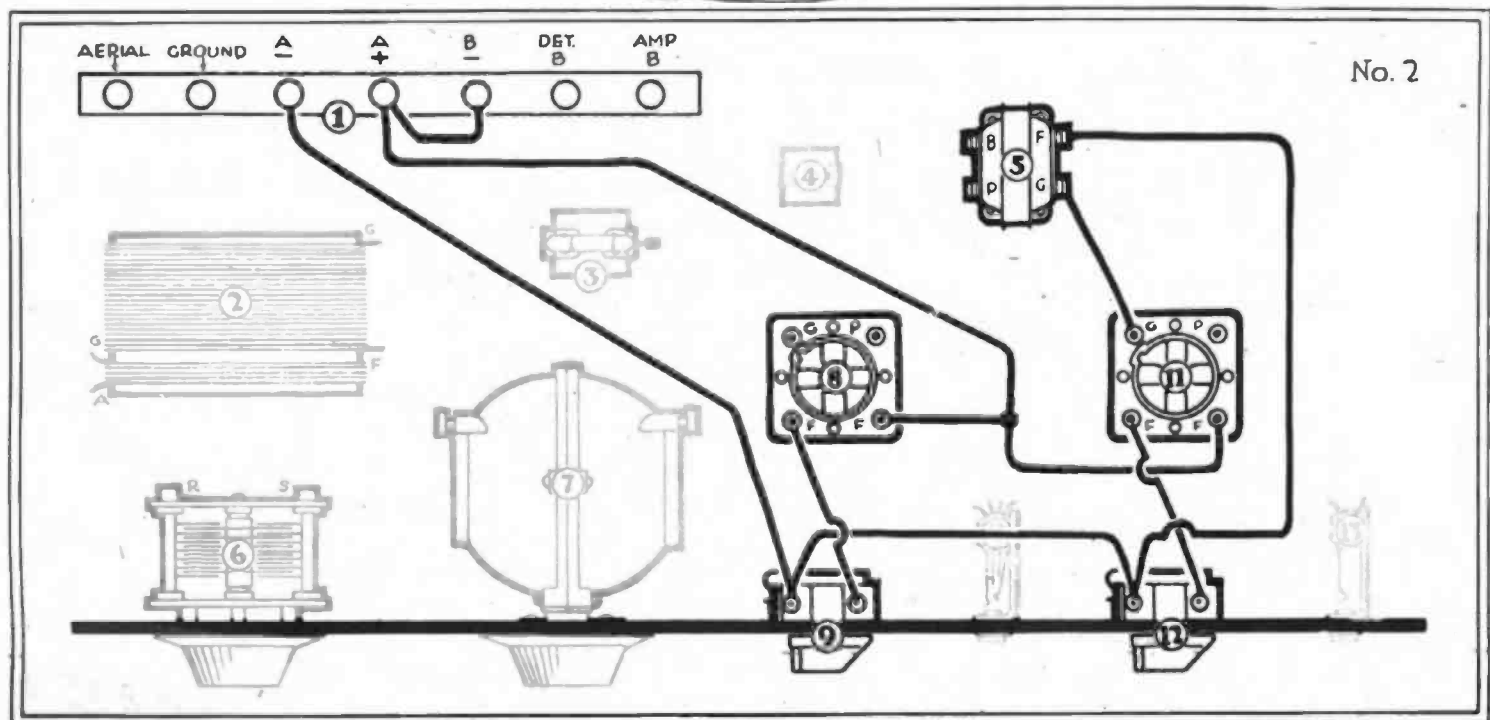
by
W. Francis Goodreau

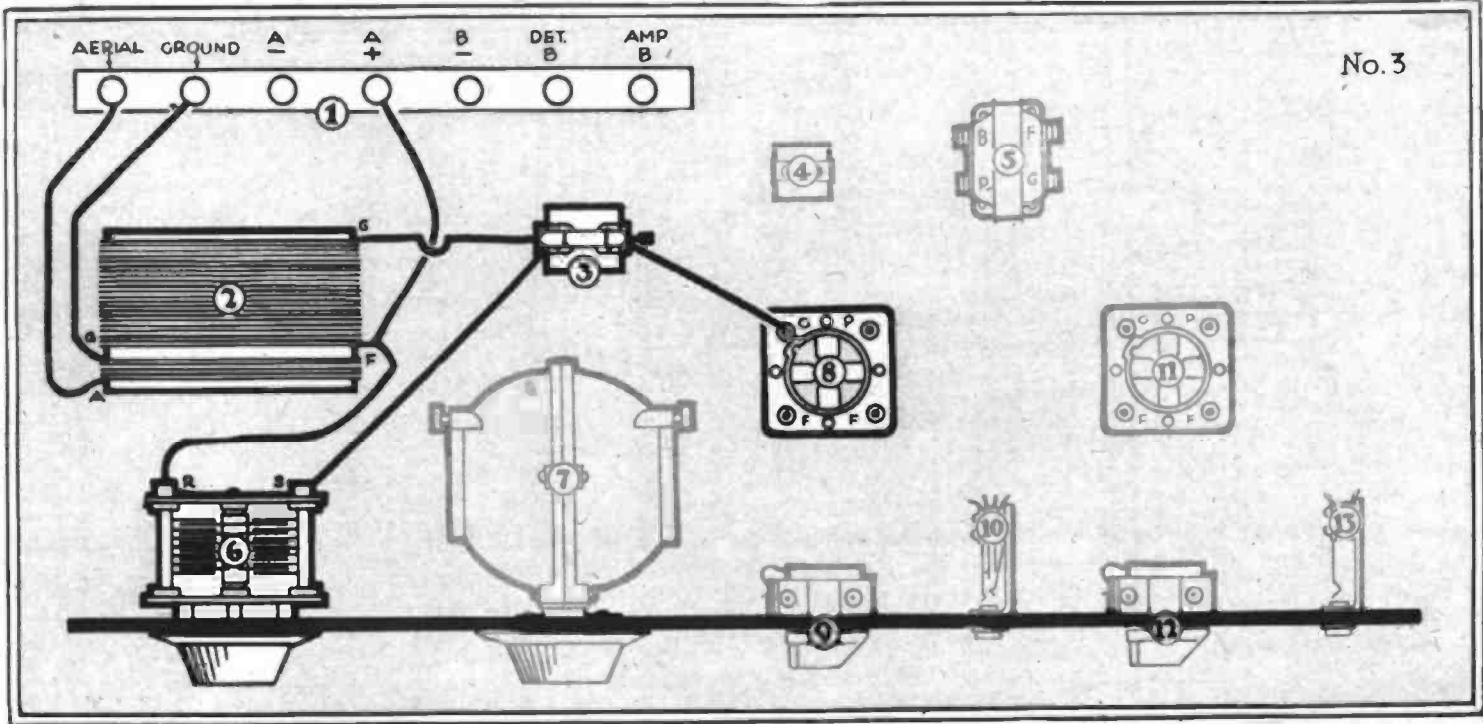
receivers should have two or at the most three controls.

With that idea in mind, I have been working with standard circuits for some time, trying to simplify them in construction and operation *without any sacrifice of volume, selectivity or range as compared with the original*. This has not been easy; it has required much experimental work, and many hours of testing different ideas before the desired results were obtained.

But H. M. N. wrote me that he was receiving many requests from new readers for just this sort of thing and so I have stuck to the work.

When the desired results were secured, they more than justified the time and labor spent. But I would like to say that the desired results were secured only when the highest grade of parts were used, and the set was built in accordance with the well-known rules of radio construction. Poor quality parts and a poor wiring job will not make a set to equal the original circuit.





If you are to simplify standard circuits, you must use the best of parts, as you are expecting as much of the few parts you are using as you have been getting from the many parts used in the standard sets.

You will notice that despite the fact that fewer parts and fewer controls are used, the fundamental wiring diagram remains the same. No changes are made in the standard circuit; the only changes are in the parts.

Many new circuits, so-called, are appearing every day, but if you will study them, you will find the same old circuits and some changes in wiring and a few extra parts that usually do not improve the circuit, but sometimes make it worse. I do not believe in this practice, and for that reason I always state in my articles, when it is true, that this is a standard

circuit. Whenever possible I prefer to simplify, not complicate, these circuits, for I believe that what the radio fan desires of his receiver is contained in this one word, RESULTS. And for that purpose these simplifications have been made.

To build this receiver I used the following parts:

- 1 Electrad verni tuner.
- 1 Kellogg variometer.
- 2 Kellogg sockets.
- 1 Pacent 30-ohm rheostat.
- 1 Pacent 6-ohm rheostat.
- 1 Electrad variohm (variable grid leak).
- 1 Dubilier grid condenser, capacity .00025 mf.
- 1 All American or Kellogg audio transformer.
- 1 Pacent open-circuit jack.

1 Pacent double circuit jack.

7 Eby binding posts.

1 Panel, radion mahoganite or black, 7x18x3-16.

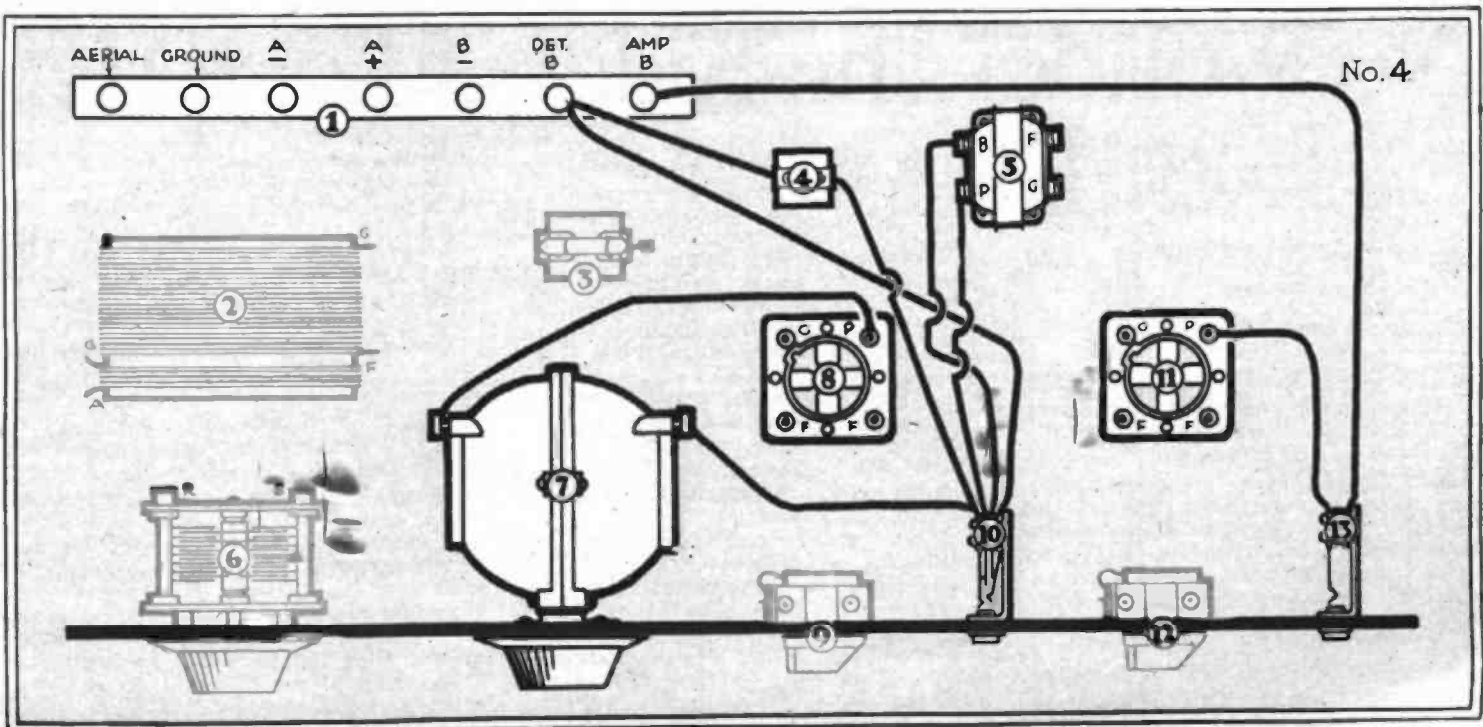
1 Baseboard.

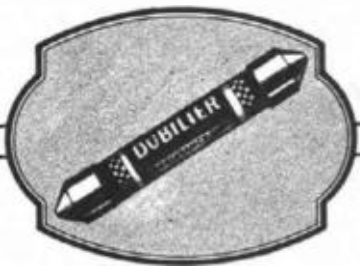
2 Dials.

Fixed condenser, capacity .002 mf.

I have often been asked why I mentioned certain makes of parts in my articles. This is the one and only reason: to guide you in your selection, so that you will be able to get the most from your receiver.

The listing of the parts mentioned does not mean that the particular parts are the best in the world, but that they rank among the best, and that these parts mentioned have been tested in actual receiving service and found to be good. I will never list parts that have not been tried by myself or H. M. N. at Station (Continued on Page 34)





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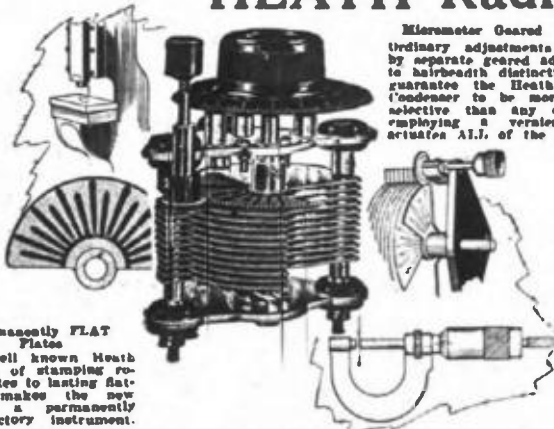
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Another Favorite Circuit Simplified

(Continued From Page 20)

3XP. This is to assure you that you can depend on the parts mentioned.

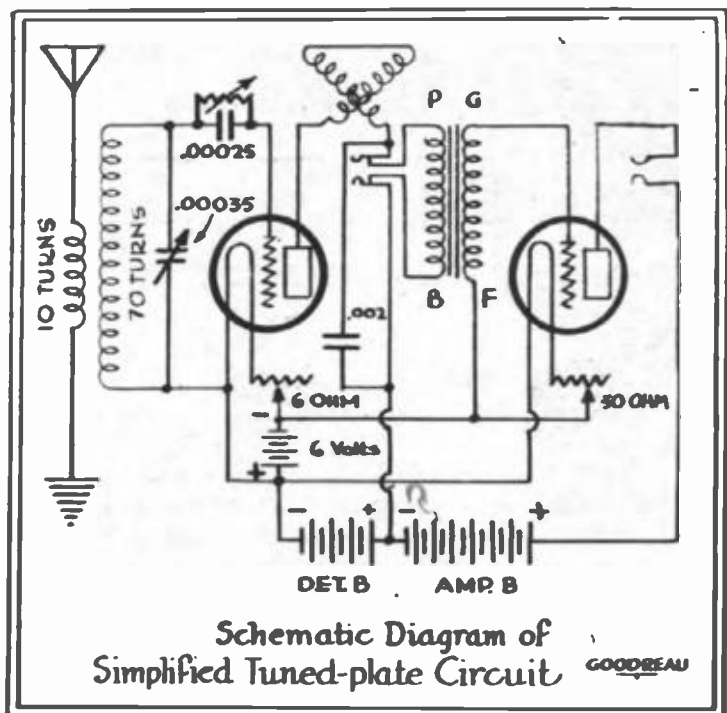
I have also been asked if I receive money from the various manufacturers for mentioning their parts in connection with my articles. I wish to say in reply to that, that I have never received one penny from any manufacturer for this service, and that any recommendation I may make is made on merit alone. I recommend these parts to help you secure the best results from your set, and these recommendations will be given to any good make of parts, but such recommendations are not for sale.

You will notice in the picture where the parts are mounted. I like this arrangement very well, but you may

hooked up before you connect the "B" battery. If the tubes light O. K. and everything seems to be as it should be, you may connect the "B" battery.

It is best with this particular set to use only 22½ volts on the detector, but this depends somewhat on the tube you use. If you use UV201-A or 199 for a detector you may use higher voltages. The amplifier voltage may be from 45 to 90 or more. If you desire quality, rather than noise, it is best to use moderate voltages on both tubes.

Connect antenna and ground. Set condenser dial on zero, and variometer dial at about ten. Turn condenser dial slowly from zero to about twenty. If no signals are heard ad-



use plans of your own, keeping in mind the following ideas: plate and filament wires should be separated from each other, grid wires must be short and away from plate wires, audio transformer should not be too close to tuning unit.

You will notice in my arrangement that the plate wires are up at the top of the panel, and that filament and grid wires are at the bottom. This is a good arrangement. I can suggest one improvement if you are going to use this for a cabinet receiver—that is, put all binding posts on the rear of the baseboard so that they will not be seen from the front of the set.

In wiring, I have used bus bar in this set, covering the filament wires with rubber tubing. I have also used this rubber tubing at any place where there was a possibility of a short circuit. You may use bus bar or cotton-covered wire about No. 18. H. M. N. has already told you that he always uses Celatsite wire at Station 3XP.

When you have done the wiring and are ready to test the set, place the tubes in the sockets and connect the batteries. It is always best to connect the "A" battery first and make sure the filament circuit is correctly

vance variometer dial and turn condenser dial slowly from twenty to forty. Repeat this until stations are heard.

When a station is heard turn condenser dial until signals are loudest, then adjust variometer dial for best results. Sometimes a slight adjustment of detector rheostat will help.

Improperly handled, this set will radiate, so please do not advance the variometer dial too far, because if you do you will spoil the concert for your neighbors. When you yourself hear a whistle, you will know your set is radiating.

I shall be glad to hear from any one building this set. If you have any trouble of any kind with it I shall be glad to help you. Please address me in care of *Radio in the Home*. I should also like to know what other circuits you would like to see simplified.

And now let us turn to the details of wiring this set. Those who understand something about radio can use my schematic diagram; beginners will find the 3XP-Style Wire-Ups simpler and easier to follow:

NOTE: In the 3XP Wire-Ups, we have shown the variable condenser and the coil of the tuning unit separ-



—And it comes in like Velvet

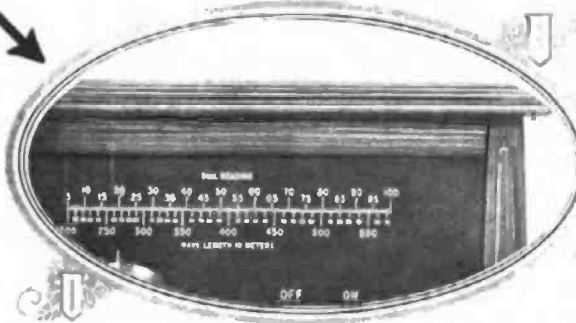
There is no station whistle on the Pfanstiehl Model 7. You hear no "air rush," no "overload," no suggestion of noise of any kind. You slowly turn the dials and the music comes in like velvet.

Pfanstiehl long ago made up his mind that it ought not to be necessary to invent methods of stopping howls and squeals in radio sets—it ought not to be necessary to neutralize or introduce the costly losses of potentiometer control. In his physicist's laboratory he developed delicate instruments with which he explored all the invisible magnetic and electro-static fields in standard sets. And he discovered that distortion and noise were primarily the results of clashing fields that interfered with each other. Reduced to simplest terms, he found that these disadvantages were due to inefficient design of coils and faulty placement of parts. With these two errors corrected, no other compensation was necessary or desirable—for all compensation means loss of valuable energy.

The Pfanstiehl Model 7 embodies his solution of these problems. It is a totally new system, incorporating two stages of tuned radio frequency, tube detector and two stages of audio amplification—low ratio, of course, to give perfect quality, with all the volume desired.

And, with the other improvements came the great step forward which takes all the guesswork out of tuning—which makes it a perfectly simple matter for the merest novice to bring in the desired station as easily and surely as he can produce a tune by putting a record on his phonograph.

PFANSTIEHL RADIO COMPANY
HIGHLAND PARK, ILLINOIS

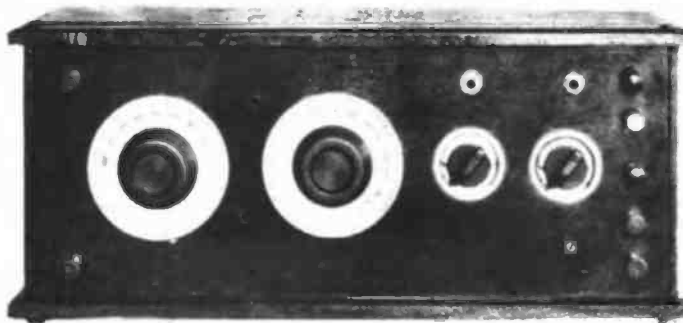


There are three large dials which are turned identically, or to the same number, for any given station. This means that to receive on any one "wave length" you need to know but one number. That number is given by the "Station Finder." On its lower scale, read the "wave length" of the station desired. Directly above read the number at which the three large dials are all to be set to secure reception. Tuning may finally be sharpened by means of the vernier knob. The women, children, "old folks," novices and all who want results, and want them promptly, may enjoy the Pfanstiehl Model 7 because the "Station Finder" takes the guesswork out of tuning.

Suggestion to Dealers
It will pay you to get in touch with us at once. This new system holds the greatest promise in radio today.

ately for those who already have a variable condenser of about .00035 capacity and who like to wind their own coils. This tuning unit may be wound on the same piece of tubing in the manner shown in the diagram. The ten turns of the primary are put on first with the two ends firmly fastened and brought out for connection to aerial and ground. The secondary is wound on the same form, with a space of about an eighth of an inch between primary and secondary. It is wise to bring out the two ends of the secondary on the opposite side of the two ends of the primary as we show in the drawing. We are also following Mr. Goodreau's suggestion

wire or can be run directly to the same positive filament binding post on socket No. 11.
6. From unconnected post on rheostat No. 12 to negative filament connection on socket No. 11.
7. From unconnected post on rheostat No. 9 to negative filament post on socket No. 8.
8. From grid binding post on transformer 5 to grid binding post on socket 11.
9. From filament binding post on transformer No. 5 a wire is run to the original binding post of rheostat No. 12 or is connected at any point on the negative filament line. It can



of showing the binding posts on the baseboard.

H. M. N.

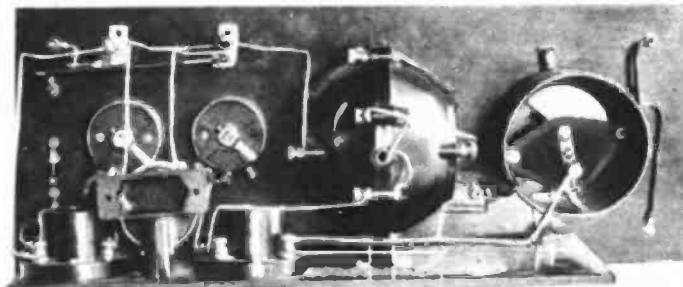
Diagram No. 1, Layout of Apparatus

1. Strip of insulating material containing seven binding posts.
2. Tuning unit if home-made. (If you buy one of the manufactured tuning units with the variable condenser already attached, then coils 2 and variable condenser 6 will all be in one instrument, and the wiring will be done as later noted.)
3. Grid condenser .00025 mfd. and grid leak.
4. Fixed condenser .002 mfd.
5. Audio-frequency transformer.
6. Variable condenser about .00035 mfd.
7. Any good high-grade variometer.
8. Tube socket.
9. Rheostat for detector tube.

be run direct to the minus A binding post on the binding post block if so desired.

Diagram No. 3, the Tuning Unit

1. From antenna binding post on the binding post block to the connection on the Verni-Tuner marked A or to the aerial lead of the primary of your home-wound tuner.
2. From the ground binding post on the binding post block a wire is run to the post on the Verni-Tuner marked G or to the ground lead of the primary of your home-wound coil.
3. From the variable condenser of the Verni-Tuner marked F a wire is connected to the positive A binding post on the binding post block.
4. From the other condenser post of the Verni-Tuner a wire is connected to the left-hand side of the grid leak and condenser.



10. Double circuit jack.
11. Tube socket.
12. Rheostat for amplifier tube.
13. Open circuit jack.

Diagram No. 2, Filament Leads

1. From negative A binding post on binding post block over to one side of rheostat No. 9.
2. From that same side of rheostat No. 12 to the identical side of rheostat No. 12.
3. From plus A binding post to minus B binding post on binding post block.
4. From positive A binding post on the binding post block over to positive filament connection on tube socket No. 11.
5. From positive filament binding post on socket No. 8 a wire is connected at any place along the former

With the home-made coil shown in the diagram this will be changed so far as the variable condenser is concerned, to read as follows:

- From rotor plates of variable condenser to filament end, or end nearest primary of your home-wound coil.
- From that same filament end of that secondary to positive A binding post on binding post block.
- From grid, or end farthest away from the panel on the secondary of the tuner, to left-hand connection of grid condenser and leak No. 3.
- From stator plates of variable condenser to left-hand connection of grid condenser and leak No. 3.
- From here on the two sets will be wired identically.
5. From right-hand connection of



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grid condenser and leak No. 3 to grid binding post on socket No. 8.

Diagram No. 4, Plate Leads

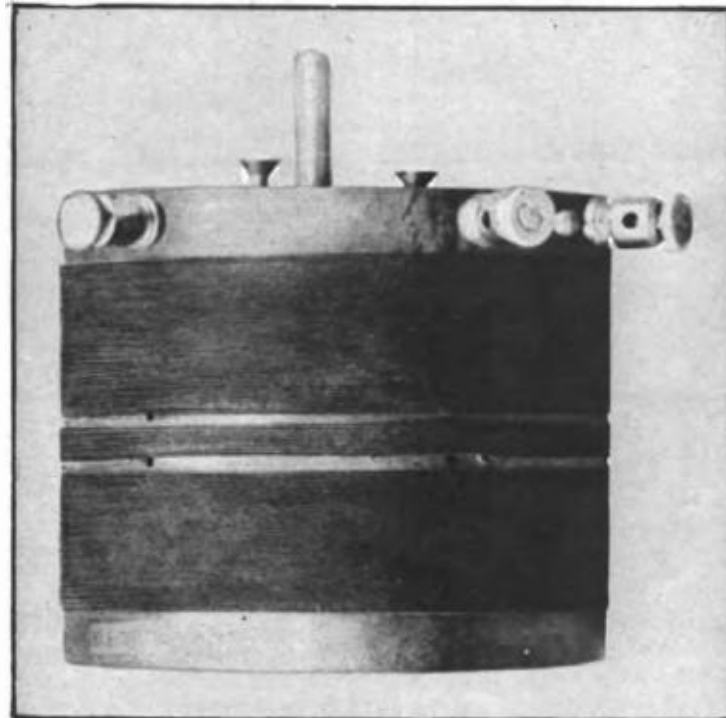
1. From detector B binding post on the binding post block a wire is run to the lowest of the four connectors of jack No. 10.
2. From the connector next to this on jack No. 10 a wire is run to B battery binding post on transformer No. 5.
8. From the next connector on jack No. 10, or the one next to the top, a

connecting them by wire as shown in the photographs to make a standard variometer of it.)

6. From detector B binding post on binding post block to one side of fixed condenser No. 4.

7. From other side of fixed condenser No. 4 to top blade of jack No. 10.

8. From amplifier B battery binding post on binding post block to lower connector of single circuit jack No. 13.



These photographs show the actual Verni-tuner mentioned by Mr. Goodreau in his article. The pictures are printed so that readers who use this instrument will be able to see the connections and readers who wind their own coils will see the difference between this and the coil shown in our diagrams.



wire is run to binding post marked P on transformer No. 6.

4. From top connector of jack No. 10 a wire is run to one binding post on the variometer.

5. From the other binding post on the variometer a wire is run to the plate binding post on socket No. 8.

(You will notice, in the photograph, a wire on the variometer which has not been mentioned. This wire merely makes a standard variometer of a "split" one. A split variometer has separate windings; in a standard variometer the windings are connected in series. You will find it worth while to buy a split variometer if you do much experimenting with hook-ups, as it can be used in any circuit either using the two windings separately or

9. From upper connector No. 13 a wire is run to the plate binding post of socket No. 11.

The actual verni-tuner is not built exactly as our diagrams show it. The coil shown in the diagram is the simplest one to build and works quite efficiently. The Electrad verni-tuner has the primary wound in between the two sections of the secondary. This will be made clear by examining the photographs of the actual verni-tuner shown with this article.

Editorially Speaking

(Continued from Page 8)

current-tap device on account of convenience, though a great many more will prefer to use the batteries because they have learned to make the use of the battery quite as convenient and as little trouble as the use of an automobile.

I believe that there is a legitimate field for both the current-tap device and the battery, whether dry cell or storage, and I believe that there is money enough in the future of radio for the manufacturers of all of these devices to make a very comfortable profit out of them.

Don't let us go wild over all of this newspaper propaganda that is being spread around.

And let us also remember that a printed guarantee of money-back is not worth the paper it is printed on unless the name signed to it is a name which carries confidence through years of square dealing and successful business endeavor.